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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional)

3712174-00463

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Signature _____

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Application Number

10/539,243

Filed

July 29, 2005

First Named Inventor

Takai et al.

Art Unit

1727

Examiner

Kwang S. Han

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

I am the

 applicant/inventor. assignee of record of the entire interest.
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.
(Form PTO/SB/96) attorney or agent of record. 46,541
Registration number _____ attorney or agent acting under 37 CFR 1.34.

Registration number if acting under 37 CFR 1.34 _____



Signature

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Typed or printed name

312.807.4310

Telephone number

May 10, 2011

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required.
Submit multiple forms if more than one signature is required, see below*.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Yuichi Takai

Appl. No.: 10/539,243

Conf. No.: 9242

Filed: July 29, 2005

Title: A COMPACT FUEL CELL SEPARATOR INCORPORATING FLUID OXIDANT SUPPLY MEANS, A FUEL CELL DEVICE AND AN ELECTRONIC APPLIED DEVICE INCORPORATING THE COMPACT FUEL CELL SEPARATOR

Art Unit: 1727

Examiner: Kwang S. Han

Docket No.: 3712174-00463

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

PRE-APPEAL BRIEF

Sir:

This Pre-Appeal Brief is submitted in reply to the Final Office Action dated February 11, 2011. This Pre-Appeal Brief is filed contemporaneously with a "Pre-Appeal Brief Request for Review" and a "Notice of Appeal."

REMARKS

This Pre-Appeal Brief, Notice of Appeal, and Pre-Appeal Brief Request for Review are submitted in response to the rejections of Claims 13 and 15-27 as maintained in the Final Office Action dated February 11, 2011. Applicant asserts that the Examiner's rejections rise to the level of clear error and make the case proper for pre-appeal review.

Claims 13 and 15-27 are pending in this application. Claims 1-12 and 14 were previously canceled without prejudice or disclaimer. In the Final Office Action, Claims 13 and 15-27 were rejected under 35 U.S.C. §103. For at least the reasons set forth below, Applicant respectfully submits that the rejections should be withdrawn.

In the Final Office Action, Claims 13, 15-16, 21, 23 and 25-26 were rejected under 35 U.S.C. §103(a) as being unpatentable over Japanese Patent Publication No. 07-249419 A to Goto et al. ("Goto") in view of U.S. Patent No. 5,258,239 to Kobayashi ("Kobayashi"). For at least the reasons set forth below, Applicant respectfully submits that the cited references are deficient with respect to independent Claims 13 and 23 and Claims 15-16, 21 and 25-26 that depend therefrom.

Independent Claims 13 and 23 recite, in part, a fuel cell separator comprising: a separator body adapted to contact with a generating element to create electrical continuity to said generating element, thereby forming a generating cell, wherein the generating element is a MEA adapted to receive hydrogen gas or methanol as fuel; a fluid oxidant supply channel formed on said separator body to supply a fluid oxidant to said generating element; and at least one element selected from the group consisting of a fan and a pump provided within said separator body for supplying said fluid oxidant into said fluid oxidant supply channel, wherein the element selected from the group consisting of a fan and a pump is provided at an opening on an inlet end of the fluid oxidant supply channel.

Conventional hydrogen or methanol-based fuel cells include an air supplying fan provided separate from the fuel cell body to collectively supply air to all of the fluid oxidant supply channels. See, Specification, page 1, paragraphs 2-5. However, if the air supplying fan is provided outside the fuel cell body, there are variations in the amount of air supplied to each channel, and it is difficult to reduce the size of the fuel cell. See, Specification, page 1, paragraphs 6-8. Therefore, the present claims provide a fuel cell wherein at least one element selected from the group consisting of a fan and a pump provided within said separator body and at an opening on an inlet end of the fluid oxidant supply channel. By providing the fluid oxidant supply fan or pump within the separator body of the fuel cell, the size of the fuel cell may be reduced. See, Specification, pages 1-2, paragraph 10. Furthermore, by providing the oxidant supply fan or pump at an opening on an inlet end of the channel, variations in the amount of fluid oxidant to be supplied to the channels of the separator may be reduced, thereby allowing for stable power generation in the fuel cell. See, Specification, page 2, paragraphs 11-12. In contrast, the cited references are deficient with respect to the present claims.

For example, even if combinable, *Goto* and *Kobayashi* fail to disclose a fan or a pump provided within said separator body for supplying fluid oxidant into said fluid oxidant supply channel as recited, in part, by independent Claims 13 and 23. The Examiner admits that *Goto* fails to teach that its flow control valves are a fan or a pump and instead relies on *Kobayashi* for the claimed element. See, Final Office Action, page 3, lines 4-19. Specifically, the Examiner asserts that it would have been obvious “to apply *Kobayashi*’s diaphragm pump in place of the flow control valves at the inlet region in *Goto*’s separator channels because *Kobayashi* teaches that this pump is a device placed in the air flow channel which can provide air supply control and enhance the electrical characteristics of the cell.” See, Final Office Action, page 3, lines 14-19.

However, *Kobayashi* merely discloses an air pump 8 which is external to its separator 5 and air diffusion chamber 2. See, *Kobayashi*, column 2, lines 44-64; Fig. 1. Contrary to the Examiner's assertion, *Kobayashi* fails to teach that its pump is "placed in the air flow channel." Although *Kobayashi*'s pump 8 is provided near air intake port 11 within cell casing 1, *Kobayashi* fails to teach that its pump 8 is provided in an air flow channel formed on the body of separator 5. See, *Kobayashi*, Fig. 1. Therefore, contrary to the Examiner's assertion, even if combinable, the combination of *Goto* and *Kobayashi* fails to disclose or suggest at least one element selected from the group consisting of a fan and a pump provided within said separator body in accordance with the present claims.

Moreover, even if combinable, *Goto* and *Kobayashi* fail to disclose or suggest a fan or a pump provided at an opening on an inlet end of the fluid oxidant supply channel as recited, in part, by independent Claims 13 and 23. The Examiner asserts that *Goto* discloses flow control valves provided "at the inlet region" of its separator channels and that *Goto* is directed towards controlling the inflow of an oxidant into a channel with its valves. See, Final Office Action, page 3, lines 16-17; page 8, lines 12-18. However, contrary to the Examiner's assertion, *Goto* expressly teaches that flow control valves 59 are "arranged near the exit of each slot 50." See, *Goto*, paragraph 44. In addition, *Goto*'s drawings showing the direction of gas flow and the locations of valves 59 and 69 indicate that the valves are placed at the outlet of slots 50 and 60, respectively. See, *Goto*, paragraph 50, Drawings 4-6. *Kobayashi* merely teaches a diaphragm pump 8 located within a cell casing but external to the separator 5. See, *Kobayashi*, column 2, lines 44-64; Fig. 1. Thus, even if combinable, *Goto* and *Kobayashi* fail to disclose a fan or a pump provided at an opening on an inlet end of the fluid oxidant supply channel as required, in part, by independent Claims 13 and 23.

Furthermore, one of ordinary skill in the art would have no reasonable expectation of success in replacing the flow control valves of *Goto* with the air pump of *Kobayashi* to arrive at the present claims because the references are directed to different problems in different fields of endeavor. The Examiner asserts that it would have been obvious to replace the flow control valves of *Goto* with the diaphragm pump of *Kobayashi*. See, Final Office Action, page 3, lines 14-19. However, "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art." See, M.P.E.P. §2143.01(III) (2009).

Goto is entirely directed to a fuel cell having improved temperature control using control valves in its gas passages. See, *Goto*, Abstract; paragraphs 10-18; Drawing 1. In contrast, *Kobayashi* is directed to a metal-air cell or battery using zinc as the negative electrode fuel which includes a small fan within the battery casing in order to reduce the size of the battery. See, *Kobayashi*, Abstract; column 2, lines 5-18. One of ordinary skill in the art would understand that a metal-air cell operates like a battery and is entirely distinguishable from a fuel cell in which the generating element is a MEA adapted to receive hydrogen gas or methanol as fuel as required by the present claims. As such, one of ordinary skill in the art would have had no reason to substitute the diaphragm pump of *Kobayashi* for the control valves of *Goto* to arrive at the present claims with a reasonable expectation of success.

In response to Applicant's arguments, the Examiner asserts that since both *Goto* and *Kobayashi* are directed to controlling the inflow of an oxidant into a channel, one of ordinary skill in the art would recognize that the devices which are used to control that flow may be substituted for one another. See, Final Office Action, page 8, lines 16-21; page 9, lines 1-2 (emphasis added). However, *Goto* teaches that its flow control valves 59 and 69 are arranged at the outlet of its gas flow passages 50 and 60. See, *Goto*, paragraphs 44 and 50, Drawings 4-6. As such, contrary to the Examiner's assertion, *Goto* is not directed to controlling the inflow of oxidant into a channel but rather the outflow of oxidant from a channel.

Moreover, one of ordinary skill in the art would have no reasonable expectation of success in replacing a flow control valve with a pump. For example, one of ordinary skill in the art would understand that a pump displaces a volume of fluid using either physical or mechanical action. See, Wikipedia, "Pump," <http://en.wikipedia.org/wiki/Pump>. In contrast, a flow control valve regulates the flow or pressure of a fluid. See, Wikipedia, "Flow control valve," http://en.wikipedia.org/wiki/Flow_control_valve. One of ordinary skill in the art would understand that flow control valves are used in addition to or with a pump to control the flow from the pump. In fact, *Goto* teaches that its control valves 69 are necessary in addition to an air supply pump 92 to precisely control the amount of air supplied to the fuel cell. See, *Goto*, Abstract; paragraphs 39 and 46. As such, one of ordinary skill in the art would have had no reason to replace the control valves of *Goto* with the pump of *Kobayashi* to arrive at the present claims with a reasonable expectation of success.

Accordingly, Applicant respectfully requests that the rejection of Claims 13, 15-16, 21, 23 and 25-26 under 35 U.S.C. §103(a) to *Goto* and *Kobayashi* be withdrawn.

In the Final Office Action, Claims 17-20 were rejected under 35 U.S.C. §103(a) as being unpatentable over *Goto* in view of *Kobayashi* and U.S. Patent No. 6,500,575 B1 to *Shiue* et al. (“*Shiue*”). Claim 22 was rejected under 35 U.S.C. §103(a) as being unpatentable over *Goto* in view of *Kobayashi*, *Shiue* and U.S. Patent No. 5,856,035 to *Khandkar* et al. (“*Khandkar*”). Claims 24 and 27 were rejected under 35 U.S.C. §103(a) as being unpatentable over *Goto* in view of *Kobayashi* and U.S. Patent No. 6,127,058 to *Pratt* et al. (“*Pratt*”). Applicant respectfully submits that, even if combinable, the cited references are deficient with respect to Claims 17-20, 22 and 24-27 for at least the reasons set forth below.

As discussed previously, the combination of *Goto* and *Kobayashi* fails to disclose or suggest a fan or a pump provided within said separator body at an opening on an inlet end of the fluid oxidant supply channel as required, in part, by independent Claims 13 and 24 from which Claims 17-20, 22 and 27 depend. Nowhere does *Shiue* teach or suggest that its micro fan is provided within the separator body, nor does the Patent Office cite support for such claimed element. Instead, *Shiue* teaches that its micro fans 15 are provided in the first and second caps 18a and 18b external to the separator sheet 122. See, *Shiue*, column 3, lines 60-67; column 4, lines 1-25; Fig. 1. *Khandkar* and *Pratt* also fail to teach a fan or a pump provided within a separator body. Thus, Applicant respectfully submits that, even if combinable, *Shiue*, *Khandkar* and *Pratt* fail to remedy the deficiencies of *Goto* and *Kobayashi* with respect to Claims 17-20, 22, 24 and 27.

Accordingly, Applicant respectfully requests that the rejections of Claims 17-20, 22, 24 and 27 under 35 U.S.C. §103(a) be withdrawn.

For the foregoing reasons, Applicant respectfully submits that the present application is in condition for allowance and earnestly solicits reconsideration of same.

Respectfully submitted,

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Date: May 10, 2011